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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,050	11/17/2003	William H. Sherwood JR.	1684-6040US (484-35273-US)	3656
24247	7590	10/05/2005	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			BOMAR, THOMAS S	
			ART UNIT	PAPER NUMBER
			3672	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/715,050

Applicant(s)

SHERWOOD ET AL.

Examiner

Shane Bomar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 20-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/17/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because of the use of the implied phrase "is disclosed". Correction is required. See MPEP § 608.01(b).
2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," "...is disclosed," etc.

Election/Restrictions

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-19, drawn to a steel body rotary drag bit, classified in class 175, subclass 432.
 - II. Claims 20-31, drawn to methods for manufacturing and repairing a steel body rotary drag bit, classified in class 76, subclass 108.2.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case any

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process known in the art other than that which is claimed can make the rotary drag bit, such as molding to form the various recesses.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Joseph Walkowski on September 26, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 20-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5, 9-12, 15, 16, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4,553,615 to Grainger.

Regarding claim 1, Grainger discloses a steel body rotary drag bit for drilling a subterranean formation, comprising: a steel bit body 4 having a centerline and including a leading end having generally radially extending blades 5 for contacting a formation during drilling (see Figs. 1 and 5); at least one cutting element pocket 7 comprising a substantially arcuate surface (the arcuate surface surrounds the support element) and a substantially planar surface (seen at the bottom of pocket 7 in Fig. 2); a cutting element 6 disposed within each of the at least one cutting element pocket, wherein the cutting element comprises a substantially cylindrical body 11, a cutting face 9, and a substantially planar surface distal to the cutting face; and wherein each of the at least one cutting element pocket comprises a support element 8 affixed to the bit body and each of the at least one cutting element pocket is configured to matingly engage at least a portion of the substantially planar surface distal to the cutting face of the cutting element disposed therein; wherein the support element forms at least the substantially planar surface of each of the at least one cutting element pocket (see Fig. 2 wherein it can be seen that the support element 8 has a planar bottom that lead line 7 points to).

Regarding claim 2, the support element of each of the at least one cutting element pocket is affixed to the bit body by at least one of welding, brazing, press-fit, and shrink-fit (see col. 3, lines 22-26).

Regarding claim 3, the support element of each of the at least one cutting element pocket is sized and configured to support the cutting element against forces applied thereto during drilling (see col. 3, lines 45-50 and col. 4, lines 6-31).

Regarding claim 4, the cutting element disposed within each of the at least one cutting element pocket comprises a polycrystalline diamond compact (see col. 3, lines 31-33).

Regarding claim 5, the support element of each of the at least one cutting element pocket comprises steel or tungsten carbide (see col. 3, lines 20-21).

Regarding claim 9, one or more support element of the at least one cutting element pocket forms more than one surface of the at least one cutting element pocket (see Fig. 2).

Regarding claims 10 and 11, the one or more support element forming more than one surface of the at least one cutting element pocket is configured to contact at least a portion of the circumference of the cutting element disposed therein, and one or more support element forming more than one surface of the at least one cutting element pocket forms substantially the entire cutting element pocket (see Figs. 2 and 3).

Regarding claim 12, one or more support element forming more than one surface of the at least one cutting element pocket is inherently press fit into a retention recess formed within the drill bit body (see Fig. 2).

Regarding claims 15 and 16, one or more of the at least one cutting element pocket surrounds more than half of a cross-sectional circumference of the cutting element disposed therein (see Figs. 2 and 3), wherein the support element is affixed to the bit body by at least one of welding, brazing, press-fit, and shrink-fit (see col. 3, lines 22-26).

Regarding claims 18 and 19, the one or more support element of the at least one cutting element pocket surrounds more than half of a cross-sectional circumference of the cutting element disposed therein is configured to contact at least a portion of the circumference of the

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cutting element disposed therein, and the support element forms substantially the entire cutting element pocket (see Figs. 2 and 3).

10. Claims 1-5 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4,200,159 to Peschel et al.

Regarding claim 1, Peschel et al disclose a steel body rotary drag bit for drilling a subterranean formation, comprising: a steel bit body 1 having a centerline and including a leading end having generally radially extending blades 2 for contacting a formation during drilling (see Fig. 1); at least one cutting element pocket 11 comprising a substantially arcuate surface (see Fig. 9a) and a substantially planar surface 6 (see Fig. 7); a cutting element 3 disposed within each of the at least one cutting element pocket, wherein the cutting element comprises a substantially cylindrical body 4, a cutting face 5, and a substantially planar surface distal to the cutting face (see Fig. 7); and wherein each of the at least one cutting element pocket comprises a support element 27 or 37 affixed to the bit body and each of the at least one cutting element pocket is configured to matingly engage at least a portion of the substantially planar surface distal to the cutting face of the cutting element disposed therein (see Figs. 7 and 8); wherein the support element forms at least the substantially planar surface 6 of each of the at least one cutting element pocket (see Fig. 7, plus Figs. 8-11 for different variations).

Regarding claim 2, the support element of each of the at least one cutting element pocket is affixed to the bit body by at least one of welding, brazing, press-fit, and shrink-fit (see col. 3, lines 61-65).

Regarding claim 3, the support element of each of the at least one cutting element pocket is sized and configured to support the cutting element against forces applied thereto during drilling (see col. 3, lines 13-19).

Regarding claim 4, the cutting element disposed within each of the at least one cutting element pocket comprises a polycrystalline diamond compact (see col. 2, lines 50-52).

Regarding claim 5, the support element of each of the at least one cutting element pocket comprises steel or tungsten carbide (see col. 2, lines 47-55).

Regarding claim 9, one or more support element of the at least one cutting element pocket forms more than one surface of the at least one cutting element pocket (see Figs. 7 and 8).

Regarding claims 10 and 11, the one or more support element forming more than one surface of the at least one cutting element pocket is configured to contact at least a portion of the circumference of the cutting element disposed therein (see Fig. 9a), and one or more support element forming more than one surface of the at least one cutting element pocket forms substantially the entire cutting element pocket (see Fig. 8 and col. 4, lines 5-8).

Regarding claim 12, one or more support element forming more than one surface of the at least one cutting element pocket is inherently press fit into a retention recess formed within the drill bit body (see Figs. 7-11).

Regarding claims 13 and 14, a secondary structure 78 or 88 is affixed to the steel drill bit body disposed within a cavity positioned rotationally trailing the support element 79 or 89 of one or more of the at least one cutting element pocket (see Figs. 12 and 13), wherein the secondary structure comprises tungsten carbide (see col. 2, lines 47-55).

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11. Claims 1, 3, 4, 6-8, and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4,199,035 to Thompson.

Regarding claim 1, Thompson discloses a steel body rotary drag bit for drilling a subterranean formation, comprising: a steel bit body having a centerline and including a leading end having generally radially extending blades for contacting a formation during drilling (see Figs. 1A and 1B); at least one cutting element pocket 19 comprising a substantially arcuate surface (the arcuate surface surrounds the support element; see Fig. 2B) and a substantially planar surface 60, which can be considered part of support element 43 (see Figs. 2A and 2C); a cutting element 17 disposed within each of the at least one cutting element pocket, wherein the cutting element comprises a substantially cylindrical body 31, a cutting face 38, and a substantially planar surface distal to the cutting face that abuts surface 60; and wherein each of the at least one cutting element pocket comprises a support element 43 affixed to the bit body and each of the at least one cutting element pocket is configured to matingly engage at least a portion of the substantially planar surface distal to the cutting face of the cutting element disposed therein; wherein the support element forms at least the substantially planar surface 60 of each of the at least one cutting element pocket (see Figs. 2A and 2C).

Regarding claim 3, the support element of each of the at least one cutting element pocket is sized and configured to inherently support the cutting element against forces applied thereto during drilling (see Figs. 2A and 2C).

Regarding claim 4, the cutting element disposed within each of the at least one cutting element pocket comprises a polycrystalline diamond compact (see col. 4, lines 3-7).

Regarding claims 6-8, one or more support element of the at least one cutting element pocket includes an aperture and is affixed to the bit body by way of an anchor element 73 or 62 extending therethrough (see Figs. 2B and 2C, and col. 4, lines 48-68), wherein the anchor element 73 is inherently deformed in the aperture of the support element because driving a steel pin into an aperture will cause some sort of deformation, and wherein the anchor element of each of the one or more support element is press-fit into a retention recess 63 within the bit body (see Fig. 2C).

Regarding claims 15 and 16, one or more of the at least one cutting element pocket surrounds more than half of a cross-sectional circumference of the cutting element disposed therein (see Fig. 2B), wherein the support element is affixed to the bit body by at least one of welding, brazing, press-fit, and shrink-fit (see col. 4, lines 22-29).

Regarding claim 17, one or more support element of the at least one cutting element pocket surrounding more than half of a cross-sectional circumference of the cutting element disposed therein includes an aperture and is affixed to the bit body by way of an anchor element 73 or 62 extending therethrough (see Figs. 2B and 2C, and col. 4, lines 48-68).

Regarding claims 18 and 19, the one or more support element of the at least one cutting element pocket surrounds more than half of a cross-sectional circumference of the cutting element disposed therein is configured to contact at least a portion of the circumference of the cutting element disposed therein, and the support element forms substantially the entire cutting element pocket (see Figs. 2A and 2C).

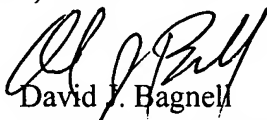
Conclusion


12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Azar, Barr, Barr et al, Clench et al, Fielder, Hall, Radke, Sahley, Scott et al, and Upton teach various other bit inserts with varying forms of support elements of particular relevance.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


David J. Bagnell
Supervisory Patent Examiner
Art Unit 3672

tsb 
September 27, 2005